

**Before the  
Federal Communications Commission  
Washington, DC 20554**

In the Matter of	)	
	)	
Facilitating the Deployment of Text-to-911 and	)	PS Docket No. 11-153
Other Next Generation 911 Applications	)	
	)	
Framework for Next Generation 911	)	PS Docket No. 10-255
Deployment	)	
	)	
	)	

To: The Commission

**JOINT COMMENTS OF THE BOULDER REGIONAL EMERGENCY TELEPHONE  
SERVICE AUTHORITY AND THE COLORADO 9-1-1 TASK FORCE**

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December 12, 2011

## Summary

There are significant benefits to current PSAP operation which will accrue from the transition to Next Generation 9-1-1 ("NG9-1-1"). These benefits should not be lost in the pursuit of transmission of new call and message formats to 9-1-1.

Voice calls will continue to be the most effective and expeditious method of conveying to the PSAP the nature and location of an incident, and of getting First Responders to the scene of the incident. Text messaging to 9-1-1 will provide some benefits for the speech and hearing impaired and in "silent call" situations where a caller to 9-1-1 would be placed at risk by making an audio call. These are a small fraction of calls to 9-1-1, however. Video calls will place significant costs on PSAPs with little corresponding benefit. The video portion of video calls should be stored at the NG9-1-1 Data Center or MSC and only the audio portion of the call transmitted to the PSAP, along with a link for retrieval of the video information when necessary.

Data transmission to the PSAPs may have significant benefits as application developers develop smartphone applications to enhance public safety. In most cases the application developers or service providers should be required to establish a call center to receive and interpret data and confirm that information from the applications do not constitute false alarms. They should only contact PSAPs after confirming that an actual emergency exists.

For the speech and hearing impaired, the Commission should require that Telecommunications Relay Services provide relay services for text messaging, since text messaging is increasingly replacing TTY devices.

The Commission should also consider in this proceeding the role of the Emergency Operations Center ("EOC"), which is placed in operation during widespread or major natural disasters and emergencies, and work with or take over functions from the PSAPs.

9-1-1 calls should be prioritized on networks where feasible, along with calls to the EOC and Emergency Notification Service Calls.

The primary statutory or regulatory impediments to NG9-1-1 is uncertainty regarding the scope of federal preemption, as well as the scope of federal preemption, which prevents state authorities from assuring that ubiquitous 9-1-1 service and ENS service is efficiently and effectively provided

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**JOINT COMMENTS OF THE BOULDER REGIONAL EMERGENCY TELEPHONE  
SERVICE AUTHORITY AND THE COLORADO 9-1-1 TASK FORCE**

The Boulder Regional Emergency Telephone Service Authority ("BRETSA") and the Colorado 9-1-1 Task Force ("Task Force") hereby submit their comments on the Commission's September 22, 2011 Notice of Proposed Rulemaking in the above-captioned docket ("NPRM"). In support whereof, the following is respectfully shown.

BRETSA is a Colorado 9-1-1 Authority which establishes, collects and distributes the Colorado Emergency Telephone Surcharge to fund 9-1-1 Service in Boulder County, Colorado. The Colorado 9-1-1 Task Force has been established by the Rules of the Colorado Public Utilities Commission ("CPUC") to provide oversight for the operation of 9-1-1 services in Colorado and report to the PUC on subjects related to 9-1-1 services. The voting membership of the Task Force includes, *inter alia*, representatives of Colorado 9-1-1 Authorities, service providers, local governments, and Basic Emergency Service Providers ("BESPs").<sup>1</sup> These

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<sup>1</sup> "Basic Emergency Service Provider" ("BESP") is the term used in Colorado statutes and CPUC regulations for the service provider which aggregates 9-1-1 calls from the various originating

comments represent the views of BRETSA and the 9-1-1 Authority-members of the Task Force. They are not intended to represent the views of service-provider members of the Task Force which are expected to file their own comments.

## **I. Introduction: A Primer On PSAP Mission And Operation.**

The mission of a PSAP is to answer calls for emergency assistance from the public, determine the nature and location of the emergency, and dispatch the appropriate First Responders to the scene of the emergency. The First Responders dispatched are prepared and equipped to deal with the range of situations they may encounter. The First Responders also, necessarily, make their own professional assessment of the situation when they arrive on scene.

Next Generation 9-1-1 ("NG9-1-1") will provide new tools for public safety agencies to use in dispatching First Responders and most quickly getting the appropriate First Responders to the scene of an incident. These new tools will be deployed in the context of Public Safety Answering Point ("PSAP") operating practices and policies which have been refined through years of experience in handling 9-1-1 calls from the public, and dispatching First Responders. These practices and policies, and the experience and knowledge on which they are based, are highly relevant to the issues raised in the NPRM.

### **A. PSAP Systems.**

Systems have been developed and are generally present in the PSAP to assist call-takers and dispatchers. Calls arriving over the 9-1-1 trunks from the Selective Router (or over the ESInet from an NG9-1-1 Data Center) are distributed within the PSAP by the PSAP Phone System. PSAP Phone Systems typically display the Emergency Service Number, Emergency

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service provider, operates the 9-1-1 Selective Routers and trunks connecting the 9-1-1 Selective Routers to the PSAPs, and also provides for the ANI/ALI database.

Service Zone or the complement of law, fire and medical agencies responsible for responding to an emergency at the caller's location.<sup>2</sup> This advises PSAP personnel which agencies to dispatch in response to any particular 9-1-1 call.

While the Selective Router, 9-1-1 Trunks and PSAP phone system will route calls to the PSAP and call-taker and identify the First Responder agencies responsible for responding to any specific caller's location; the PSAP will access the ANI/ALI database through a separate set of phone circuits to retrieve the address or coordinates at which the caller is located.<sup>3</sup> This data will be displayed on the PSAP phone system or the Computer Aided Dispatch ("CAD") system. With NG9-1-1, this location data should be embedded in the data stream of the call.

PSAPs generally have "call-loggers" which record the 9-1-1 calls and index the recordings. They also have paging or tone-out systems to dispatch fire and medical First Responders, and radio systems to dispatch and communicate with First Responders.

The heart of a modern PSAP is the Computer-Aided Dispatch ("CAD") system. A basic CAD system will be used to record call information, access records regarding previous incidents at the caller's location, or warnings regarding storage of hazardous materials at a site, for

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<sup>2</sup> The "Emergency Service Number," or " ESN," is the ten-digit telephone number substituted for the dialed-number "9-1-1" at the 9-1-1 Selective Router. The ESN routes the call to the PSAP with jurisdiction and authority to dispatch First Responders to the caller's location. Each ESN is also associated with a specific " Emergency Service Zone," or " ESZ," which is an area within the PSAPs jurisdiction served by a unique combination of law enforcement, fire and medical First Responder agencies or stations. Thus, the ESN is both used by the 9-1-1 Selective Router to route the 9-1-1 call to the correct PSAP, and is used by the PSAP phone system to identify the First Responder agencies to be dispatched to the caller's location.

<sup>3</sup> "ANI," or "Automatic Number Identification," is the caller's telephone number which is transmitted to the PSAP with the 9-1-1 call. "ALI," or "Automatic Location Identification," is (i) the address at which the caller's wireline phone service is installed, (ii) the address of the cellular telephone system tower and antenna over which a wireless call is received, (iii) the location of the wireless caller, when available, or (iv) the stated address of the VoIP caller. The ANI/ALI database is a list of address or location information associated with telephone numbers, which can be dynamically updated in real time with wireless caller locations.



example. CAD systems generally keep track of First Responders who are on duty and their status (e.g., whether they are available to take a call, responding to an incident, etc.); and with Automatic Vehicle Location ("AVL") installed in First Responder units the CAD system will also track unit location. When a 9-1-1 call is received, and the incident-type and location entered into CAD; most CAD systems can make a rule-based recommendation of units to respond. Some can even automatically dispatch First Responders.<sup>4</sup>

With AVL, CAD systems can recommend or automatically dispatch the units which can reach the scene of the incident in the least amount of time. In calculating which First Responder units can soonest reach the scene of the incident, the CAD system takes into account (i) unit locations, (ii) the actual routes the units will travel to the scene and the speeds at which they will travel, (iii) temporary road closures due to construction and periodic road closures such as scheduled train crossings at grade-level crossings, and even (iv) real-time monitoring of traffic volumes and speeds on specific routes where Department of Transportation traffic monitors are available. Even where real-time traffic volume and speed data is not available, data regarding average hourly fluctuations in traffic volume and speed can be used by CAD systems.

First Responder units equipped with Mobile Data Terminals ("MDTs"), may run mobile CAD applications. In addition to messaging and data access applications, the applications may include routing applications. Such routing applications display a map with the route to the incident, and provide audible directions similar to consumer automotive GPS units..

Some jurisdictions have multiple PSAPs. Where there are multiple PSAPs, they can operate off of a single CAD server networked to workstations in each PSAP; or a separate CAD

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<sup>4</sup> Typical rules for dispatch might, for example, provide for two law units to respond to a domestic dispute, one law unit to respond to a motor vehicle accident without injury, one law, one paramedic and one fire unit to respond to a one- or two-car accident with injuries, a brush truck to respond to a grass-fire, a pumper and a ladder truck to respond to a structure fire, etc.

server can be installed in each PSAP. In the latter case, the CAD servers can be networked and data exchanged by CAD-to-CAD transfer. The decision as to which of these configurations to implement is made by local authorities based on factors such as the number of agencies dispatched, hierarchical structure, CAD system costs and network costs. Data can also be exchanged between CAD systems serving different and adjacent jurisdictions, if data interfaces are developed to place the exchanged data in the correct data fields, and if they are connected by network facilities.

PSAPs also have 10-digit administrative lines, separate from the 9-1-1 trunks, over which calls relating to incidents are sometimes received. Calls received over administrative lines are *not* automatically routed to the PSAP in whose jurisdiction the caller is located, *do not* automatically identify the complement of First Responder agencies which will respond to the caller's location, *do not* allow retrieval of ANI/ALI data, and *are not* generally recorded by call-logging systems. Administrative lines are typically answered on a secondary basis to the 9-1-1 lines.

## **B. 9-1-1 Call Transfer.**

The legacy 9-1-1 System in Colorado features paired and redundant 9-1-1 Selective Routers, as well as redundant and diverse 9-1-1 trunks. This system provides a level of survivability, and also permits the transfer of misrouted 9-1-1 calls to the correct PSAP using a three-digit transfer code.<sup>5</sup>

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<sup>5</sup> Misrouting of 9-1-1 calls is a relatively frequent occurrence with wireless calls. Because GPS and other location systems take 30 seconds to several minutes to determine the caller's location, if at all (GPS signals do not penetrate most buildings, natural or concrete canyons, or heavy vegetation), wireless 9-1-1 calls are initially routed based upon the location of the cell tower or antenna on which the signal is received (or the location of the main population centroid served by the antenna on which the signal is received). Where the wireless cell site at which a wireless 9-1-1 call is received serves areas in more than one jurisdiction, or a call has been picked up at a more distant site than would ordinarily be expected, the 9-1-1 call will be initially routed by the

Only calls which are received over the 9-1-1 system and 9-1-1 trunks can be transferred to another PSAP; calls received over administrative lines cannot be transferred. In addition, only the call itself can be transferred. None of the information the call-taker at the first PSAP has entered into the CAD system is transferred with the call. The call-taker at the second PSAP, which can dispatch First Responders to the caller's location, must begin all over again gathering information from the caller after the call is transferred.<sup>6</sup> CAD data is not transferred because the Colorado PSAPs are not linked by a data network for that purpose.

If the CAD incident data already entered for a call at the Call-Taking PSAP could be transferred with that call, the CAD system at the Dispatching PSAP would receive the data indicating the nature and location of the emergency with the call and could use that data to recommend or automatically dispatch First Responders, even before the second call-taker

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selective router to the wrong PSAP. Although rarer, calls can be misrouted due to errors in the Selective Router database ("SRDB").

PSAPs supported by BRETSA are working with the 9-1-1/Colorado Foundation and NextNav, LLC (formerly Commlabs, Inc.) on a project to evaluate and demonstrate the capabilities of NextNav's terrestrial GPS system. This system features more powerful transmitters than satellite-based GPS, the signals from which are able to penetrate buildings, and are also able to provide vertical location resolution with 2-meter accuracy. In addition, the NextNav system allows wireless handsets to determine their position within 2 to 6 seconds from a cold start of the GPS chipset. Because the NextNav system will reduce the battery drain of the GPS chipset in the wireless device by up to 90%, there is a reduced imperative to turn off the GPS chipset when not being used by applications or for 9-1-1 location determination. This more rapid acquisition of location information may make Phase II Wireless Call Routing feasible and reduce the incidence of misrouting; although misroutes will still occur. In the longer term, the NextNav system may provide an alternative and low cost remedy for location determination of VoIP devices and stations behind a PBX, at least with VoIP PBXs.

<sup>6</sup> A PSAP receiving a 9-1-1 call from a location to which it cannot dispatch First Responders will be referred to herein as the "Call-Taking PSAP," and the PSAP which can dispatch First Responders to the caller's location will be referred to as the "Dispatching PSAP."

answered the transferred voice call. In such a case, there would be almost no additional delay in the dispatch of First Responders as a result of the initial misrouting of the call.<sup>7</sup>

## **II. 9-1-1 Call and CAD Data Transfer With Next Generation 9-1-1.**

The Emergency Services IP Network (“ESInet”) which is a feature of NG9-1-1 will be a digital network interconnecting the NG9-1-1 Data Centers and the PSAPs. The ESInet will be capable of carrying digitized voice, video and data. The ESInet will provide the ability to transfer CAD incident data along with 9-1-1 calls from a Call-taking PSAP to a Dispatching PSAP. The importance of this capability should not be lost in the excitement over the new capabilities to transmit text messages, video and data to the PSAP.

### **A. Transfer of Misrouted and Overflow 9-1-1 Call Data.**

As discussed above, the ability of a PSAP to transfer information already gathered from a caller to the Dispatching PSAP, simultaneously with the transfer of a misrouted call, can eliminate the delay in dispatching First Responders when a 9-1-1 call is misrouted. Committees are already developing IDX tag definitions for CAD data interchange.

AT&T has proposed Regional Advanced PSAPs to which text messages, video calls or other data addressed to 9-1-1 might be routed when the Dispatching PSAP lacks network capacity or PSAP facilities to handle the call. In addition, one of the advantages of NG9-1-1 is the routing flexibility of the NG9-1-1 system, in the event of overflow or outage situations. The

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<sup>7</sup> Some jurisdictions are served by multiple PSAPs and provide for 9-1-1 calls to be routed to an alternate PSAP in the event that the PSAP which should ordinarily receive the call and dispatch First Responders is in an call-overflow (or outage) situation. Where the PSAPs utilize the same CAD system (as the BRETSA PSAPs do), each PSAP can view incidents to which the other PSAPs are responding, and can view First Responder resources typically managed by the other PSAPs. In that case the PSAP to which the overflow call has been routed may be able to dispatch First Responders without transferring the call, if it has access to the necessary radio facilities.

NG9-1-1 Data Center can apply routing rules in such situations to route 9-1-1 calls, messages or data (i) over the ESInet to another PSAP, (ii) over the Public Switched Telephone Network (“PSTN”) via 10-digit telephone number to any wireline or wireless phone or interconnected VoIP phone, (iii) over the public Internet to any 56Kbps or faster connection, (iv) over public safety radio system to First Responders, or to the Network Operation Centers of hosted telephone system providers.

Once a 9-1-1 call is routed to a Regional Advanced PSAP, alternative PSAP or other location due to an overflow situation, a caller-taker will be available to take the call and determine the location and nature of the emergency.<sup>8</sup> However First Responders may still need to be dispatched. To remotely dispatch First Responders, a remote PSAP or dispatcher would need to know if the incident has already been reported and First Responders dispatched, or if it is a new incident. If a new incident, the remote PSAP or dispatcher would need to know which First Responders were on duty and available for dispatch, and have remote access to the dispatch radio systems.

If the remote PSAP or dispatcher does not have access to such information and systems, the alternative is for the remote call-taker to communicate the incident data to the Dispatch PSAP. Creating a CAD incident file and transmitting it to the Dispatching PSAP will be the most effective means of doing so. Transfer of an incident file directly into the Dispatching PSAP’s CAD system eliminates the need for Dispatching PSAP personnel to manually enter the data into CAD. In addition, Richmond, Virginia, which was a pilot site for APCO Project ASAP, found that those alarm companies transmitting CAD data files regarding premises alarms under that project were able to deliver alarm information during to the PSAP during the August 2011

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<sup>8</sup> PSAPs should have backup plans for dispatch of First Responders in event of a PSAP outage.

earthquake and Hurricane Irene, while PSAP call-takers were busy answering 9-1-1 calls.<sup>9</sup> The Project ASAP file-transfers use the NLETS network, CCIC in Colorado; but the NG9-1-1 ESInet will likely be the preferred medium for exchange of calls and data between PSAPs.

In many PSAPs, personnel are assigned to work either as call-takers or as dispatchers.<sup>10</sup> Call-takers answer calls coming into the PSAP, and enter incident information obtained from the caller into the CAD system. The dispatcher communicates with the First Responders, and dispatches First Responders to new incidents based on the incident data the call-taker has entered in the CAD system. Thus, having call-takers at a remote PSAP enter data into the remote PSAP's CAD system, and transmit the CAD incident file to the Dispatching PSAP for dispatch of First Responders, is consistent with typical PSAP operations.

The larger issues presented by remote or regional PSAP interoperability may be the practical problems presented by having records and data regarding calls distributed among PSAPs and agencies in multiple jurisdictions, and possibly issues of compensation for services provided by remote PSAPs.

## **B. Interstate 9-1-1 Call And Data Transfer.**

Larimer County, Colorado shares a border with Wyoming. 9-1-1 calls originating in Laramie County or Albany County, Wyoming are sometimes routed to Colorado, and 9-1-1 calls originating in Larimer County are sometimes routed to the PSAPs for those Wyoming counties. These are not only misrouted wireless calls, but can involve wire line customers in one state

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<sup>9</sup> Daniel Galinas, "Natural disasters test concept for ASAP-to-the-PSAP program," *Security System News*, September 1, 2011, accessed December 10, 2011, <http://www.securitysystemsnews.com/article/natural-disasters-test-concept-asap-psap-program>.

<sup>10</sup> Generally, PSAP personnel are trained as both call-takers and dispatchers, and may serve in either capacity on any particular shift. Agencies have generally found that separating the call-taking and dispatching functions is more operationally efficient where call-volumes and the number of personnel permit.

served by an LEC end office in an adjacent state. When a 9-1-1 call placed by a person in Wyoming is received in a Larimer County PSAP, the call cannot be transferred because the state 9-1-1 Networks are not interconnected. The call-taker at the PSAP in Colorado must call the appropriate PSAP in Wyoming on a 10-digit administrative line and relay the information provided by the caller to personnel in the Wyoming PSAP.

The experience of Larimer County PSAPs in dealing with calls from other state's is not unique, and is exacerbated along more heavily populated state borders. The interconnection of state 9-1-1 networks envisioned for NG9-1-1 would allow transfer of the call, with any data entered in CAD prior to the call-taker discerning that the caller was located in another state.

### **C. Regional PSAP Networks.**

BRETSA supports four PSAPs: (i) a PSAP operated by the Public Safety Department of the City of Longmont, which primarily dispatches City of Longmont Police and Fire for incidents in the City of Longmont, (ii) a PSAP operated by the City of Boulder Police Department, which dispatches City of Boulder Police and Fire for incidents in the City of Boulder, (iii) a PSAP operated by the University of Colorado Police Department which primarily dispatches campus police, and (iv) a PSAP operated by the Boulder County Sheriff's Department which primarily dispatches the Sheriff's Department, the Cities of Lafayette and Louisville, the Towns of Erie, Jamestown, Lyons, Nederland and Superior, and 23 fire protection districts. The four PSAPs share a hosted digital 9-1-1 telephone system provided by Intrado with redundant equipment installed at two diversely located and hardened locations, and connected to the PSAPs via redundant, diversely routed facilities. The PSAPs also share a single CAD System, even though the PSAPs are located up to 14 miles apart.

The BRETSA configuration allows each PSAP to view the incidents to which the other PSAPs in Boulder County are responding, and the status of First Responders. The City of Boulder and City of Longmont PSAPs can see when a Sheriff's Deputy has made a stop or is responding to an incident within the city limits, for example. If one of the PSAPs experiences a call-overflow situation, 9-1-1 calls are routed to one of the other Boulder County PSAPs and call-takers have visibility as to whether the calls concern an incident to which First Responders are already responding, or a new incident. The Boulder PSAPs are able to enjoy the advantages of (i) a typical combined or consolidated, single-location, PSAP with First Responder status and incident information available to all call-takers and dispatchers, and (ii) redundant, diversely located PSAPs.

In Western Colorado, the representatives of the six counties of Delta, Gunnison, Montrose, Ouray, Hinsdale and San Miguel have been discussing for several years building a regional NG9-1-1 network to connect their PSAPs for dealing with outages, overflow, and peak load sharing, and to achieve some of the benefits of a BRETSA-style system. They have joined in the development of common GIS data for CAD and ENS, and several counties are considering the joint purchase of CPE to facilitate networking the PSAPs. Most of the six counties have purchased CAD systems from the same vendor making CAD-to-CAD data transfers more readily achievable. Alternatives include hosted-CAD provided through the NG9-1-1 Data Center or, given adequate bandwidth in the NG9-1-1 system, operating the PSAPs in all six counties off a single CAD system in a manner similar to the BRETSA configuration.

Boulder County has a population of 294,567 in 751 square miles. Delta, Gunnison, Montrose, Ouray, Hinsdale and San Miguel Counties have a combined population of about 100,000 (60,000 ALI phone lines) in 9,567 square miles. The Boulder County PSAPs are located



within 14 miles of one another, while the PSAPs of Delta, Gunnison, Montrose, Ouray, Hinsdale and San Miguel Counties are separated by as much as 90 miles. Yet similar arrangements and efficiencies to those enjoyed by the BRETSA PSAPs might be realized by networking the rural county PSAPs through the NG9-1-1 ESInet. The bandwidth requirements for BRETSA's CAD network appear to be within the design capacity of an ESInet. Thus the transition to NG9-1-1 should enable the development of regional PSAP networks for improved public safety response.

#### **D. 9-1-1 Load Sharing.**

The routing flexibility of NG9-1-1 and the ability of PSAPs to interoperate has become important because of the level of calls which PSAPs frequently receive as a result of the ubiquity of wireless service. For example, BRETSA-supported PSAPs have faced instances in which over 120 9-1-1 calls have been received related to a single accident on a major commuter route. Passers-by continued to place calls to 9-1-1 until First Responders were on-scene. Such call levels can easily overwhelm the 9-1-1 network and PSAP resources, and block calls regarding other emergencies at other locations in the jurisdiction.<sup>11</sup> It is economically infeasible to design ESInets, and equip and staff PSAPs, to handle peak call levels of this magnitude. The better solution, which will be facilitated by the flexible routing available with NG9-1-1, is to spread peak loads (call overflow, as discussed above) over multiple PSAPs.

Spreading peak call loads among multiple PSAPs/routing overflow calls to alternate PSAPs effectively provides additional call-takers to answer 9-1-1 calls. The ability of those call-

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<sup>11</sup> CPUC regulations require the BESP design the 9-1-1 network to provide a P.01 grade of service, so that not more than 1 call in 100 will be blocked during the busy hour. Grades of service are almost meaningless in a wireless world, however, where multiple wireless providers can simultaneously feed tens or hundreds of 9-1-1 calls into the 9-1-1 network whether in response to an accident on a major highway, or a natural disaster. Even if a P.01 grade of service is maintained within the 9-1-1 network the call volumes can exceed any reasonable PSAP design and staffing capacity.

takers to create local CAD incident files and then transmit the files to the dispatching PSAP presents an efficient method of PSAP interoperation. Over the longer term, it may create economies enabling individual PSAPs to reduce peak staffing levels and make more effective use of limited public funds.<sup>12</sup>

Completion of work creating xml tag definitions for data transfer, and sharing of GIS data for areas from which calls will be handled by remote PSAPs, will enable and enhance the effectiveness of such PSAP interoperation.

NG9-1-1 and its interconnected ESInets will serve a vital role in (i) permitting transfer of CAD data with the transfer of misrouted 9-1-1 calls, (ii) creating the potential for Regional Advanced PSAPs to handle call formats which other PSAPs cannot, (iii) providing for transfer of 9-1-1 calls and data between PSAPs in adjacent states, (iv) allowing regional coordination and interoperability of PSAPs, and (v) allowing 9-1-1 load sharing through distributed processing of 9-1-1 calls. These advantages of NG9-1-1 promise greater improvements in public safety response benefitting more people than the capabilities of text messaging 9-1-1 or transmitting video calls to 9-1-1. The emphasis should be on facilitation of these advantages.

### **III. The Role of Audio-calls, Text, Video calls and messages, and Other Data in PSAP Operations.**

Audio calls will continue to be the most effective means of communicating to the PSAP the information necessary to achieve the most expeditious dispatch of First Responders. Text messaging will be less efficient than audio calls, but will improve communications with the PSAP for the speech and hearing impaired community, and can be beneficial in “silent call”

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<sup>12</sup> Some putative NG9-1-1 providers have suggested that competitors offerings establish islands of NG9-1-1 capable of handling text and video calls, but which are proprietary or otherwise incompatible with the systems of other providers and which don't allow for universal interoperability. This is a matter to be addressed by standards-setting organizations and the Public Safety Authorities which are consumers of the services.

situations in which the “caller” cannot place an audio call without putting himself or herself in danger. Video calls and transmission of video will be the most bandwidth-intensive method of communicating information regarding an incident to the PSAP and impose the greatest costs on the public safety community, with the least corresponding benefit. Data to the CAD has the potential to expedite routing of calls to PSAPs or call-takers best prepared to deal with them, or could significantly complicate and increase the expense of PSAPs dealing with numerous and diverse systems and applications to interpret and use such data, depending upon how it is implemented.

**A. Audio Calls To The PSAP Will Continue To Be The Most Effective and Expeditionary Means Of Getting First Responders To The Scene Of An Incident.**

The PSAPs primary mission is to determine the nature and location of the emergency, and dispatch appropriate First Responders as quickly as possible.

Quickly obtaining the essential information to dispatch the appropriate First Responders is best achieved through a voice-call, a “plain old telephone call,” to 9-1-1. Callers are often excited, upset and/or emotional. The call-taker is able to hear the caller’s voice, gauge the level of stress and emotion and try to calm the caller down as necessary to obtain the necessary information. The sound of the caller’s voice and whether it indicates stress and emotion can assist in gauging the quality of the information provided. The sound of the dispatcher’s voice can have a calming effect on the caller. The dispatcher is able to interrupt the caller to ask pertinent questions and get the facts most relevant to dispatch first, before obtaining less important information.

Voice calls also best-enable the call-taker to multi-task, speaking with the caller while entering information provided by the caller in the CAD system, reviewing premises history data, determining whether the incident is already in the system and being responded to, etc.

Making a voice call would also appear to best leave the “caller” able to multi-task. That is, callers reporting accidents sometimes call to report an accident as they continue travelling down the highway. While either calling or texting would be distracted driving, texting appears to involve greater distraction than calling. Even when a caller is not driving, the caller will likely remain more situationally-aware in what may be a hazardous situation, will be better able to render first aid as instructed by the call-taker, etc.<sup>13</sup> Similarly, a caller who is more attentive to capturing video to transmit to the PSAP may be distracted from communicating with the call-taker and from staying safe themselves.

In the ordinary case, voice calls will be the most expeditious and effective means of getting First Responders to the scene of the incident. While the Commission discusses the potential of having an on-screen message alert smartphone users if text messaging is not available in the jurisdiction in which they are located; it would be preferable if an on-screen message would alert smartphone users addressing a text or video message to 9-1-1 that placing a voice call will get First Responders on scene sooner.

**B. If Properly Implemented, Text Messaging to 9-1-1 Will Provide Limited But Important Benefits.**

Text messaging to 9-1-1 will provide the speech and hearing impaired community an improved means of communicating with the local PSAP, and will also address the “silent call”

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<sup>13</sup> After obtaining the necessary information to dispatch First Responders, PSAP call-takers may proceed to provide Emergency Medical Dispatch (“EMD”) for calls involving illness or injury. EMD is somewhat of a misnomer, as it actually refers to the provision by phone of instructions in rendering First Aid.

situation. While these benefits are important, audio calls should be the preferred means of contacting 9-1-1 in the ordinary case.

### **1. Advantages Of Text Messaging To 9-1-1.**

The key advantage of text messaging to 9-1-1 will be in facilitating communications with the PSAP by speech and/or hearing impaired individuals. Text messaging is generally preferred by the speech and hearing impaired community over TTY communications because it is more portable, ubiquitous, and convenient.

Text messaging can allow individuals to communicate with the PSAP in the “silent call” situation, when making an audio-call could place them at risk. As the Commission discussed in the NPRM, text messaging provides an alternative means of communicating when voice networks are blocked due to call levels, as in the August 2011 earthquake and hurricane which affected the eastern coastal states.

In the case of SMS messaging, the limited number of characters which may be included in a message provides certain advantages. The limitation in message size limits the time a “caller” takes to write the text message and send it to 9-1-1. This first text message will alert the PSAP to the fact that there is an incident, and allow the call-taker to respond with a text message to interrogate the “caller” to determine the nature and location of the emergency. The limitation in the number of characters in a text message to 9-1-1 would also allow PSAP personnel to scan a screen of text messages and identify those which relate to the same incident and those which do not, and perhaps to quickly pull from different text messages regarding an incident the necessary information to dispatch First Responders.

Text messaging should also be the least-cost NG9-1-1 service or application to implement. In the case of SMS messages, approximately 300 messages are the same size as a

single minute of a digitized voice call. One NG9-1-1 service provider which proposed to deploy NG9-1-1 service in Colorado projected that it could convert or replace the current BESP's trunks to the PSAPs with digital trunks and handle current voice traffic and text messaging within the current capacity, with its rates capped at the level of the BESP's current rates for legacy 9-1-1 service. (Additional network capacity to handle video would require additional network capacity, at additional cost, but there is insufficient experience with video to 9-1-1 to predict bandwidth requirements.)

Finally, BRETSA and the Task Force do not see the consumer expectations of an ability to send text messages to 9-1-1 as an advantage of text messaging. This is because text messaging is a less-efficient means of communicating to the PSAP the information necessary to dispatch First Responders. The vast majority of calls to 9-1-1 do *not* involve silent-call scenarios and are not from the speech and hearing impaired community. In the vast majority of cases, audio calls will be the fastest means of getting First Responders to the scene of the incident. As text messaging is made available, public education efforts should emphasize that in an emergency, people should "*call*" 9-1-1 first.

## **2. Disadvantages Of Text Messaging To 9-1-1.**

The Commission discusses several disadvantages of text messaging to 9-1-1, some depending upon the text messaging system used. Depending on the text messaging system, delivery of text messages can be delayed by minutes, when seconds count; and there may be no confirmation of delivery.

The PSAP will not even be aware of the existence of the incident until the text message is received, and the time the "caller" takes to write the message delays the time at which the caller can begin to interrogate the "caller" to obtain the information necessary to dispatch First

Responders, or even to determine whether the incident being reported is a new incident or one to which First Responders are already responding. If the text messaging system does not limit the length of text messages, including implementations which appear to automatically link SMS messages, the time required for the call-taker to even receive the initial message will be increased based upon the length of the text message the “caller” writes, perhaps including information irrelevant to the dispatch of First Responders. The time required for the call-taker to review the messages for the information necessary for dispatch will also be increased. There will also be issues of literacy and language.

Text messaging does not allow the call-taker to hear the caller's voice and sense the caller's emotional state and respond accordingly, or the caller to hear the call-taker's voice. The call-taker is also unable to hear sounds in the background of the call. Exchanging text messages with a caller may impact a call-taker's ability to multi-task and continue with related tasks which involve use of the keyboard and CAD system. A call-taker cannot simultaneously type information into the CAD system, and respond to the “caller” by text message; capturing the entire stream of messages in the CAD system will not aid the dispatcher, who needs the text conversation distilled down to the relevant facts.

For the caller, text messaging would appear to have a more serious impact on the ability to multi-task and on situational awareness. It is generally recognized that text messaging is much more distractive than engaging in a telephone conversation, which is itself distractive. Text messaging has been responsible for countless automobile accidents, and even pedestrians distracted by text messaging have walked into traffic and been killed. Some people will communicate with 9-1-1 to report an incident while continuing to drive. Even if the person is not driving when they communicate with 9-1-1, the scene of an incident is often an inherently

dangerous place. A person text messaging 9-1-1 will also not be able to continue to communicate with 9-1-1 and have his or her hands free to follow call-taker instructions to provide first-aid until the First Responders arrive.

### **3. Conditions For Provision Of Text Messaging To 9-1-1.**

BRETSA and the Task Force recognize the importance of the deaf and hearing impaired community being able to communicate with the PSAP, and the benefit of text messaging to 9-1-1 "silent call" situations, which represent a very small percentage of calls to 9-1-1. Text Messaging for the convenience or to meet the expectations of some members of the public is not advantageous where it in fact delays the dispatch of appropriate personnel to an incident.

Federal, state and local resources for public safety are all limited, particularly at this time. When resources are limited, providing funding for one system or service means that funds are taken away from other systems and services which may benefit many more people. Funds must be applied where they can have the greatest impact. As applicable here, devoting funds to an interim solution for text messaging may mean that less funds will be available in the future for a more effective solution, once NG9-1-1 has been deployed and PSAP systems updated to take advantage of NG9-1-1. Thus, the general consensus of the 9-1-1 Authority members of the Task Force and the position of BRETSA is that Public safety resources should not be directed toward the implementation of text messaging to 9-1-1 until a solution is developed which meets certain conditions for effectiveness.

The criteria for an acceptable text messaging system for 9-1-1 include the following:

(i)*Abbreviated Addressing*: The capability to route to the PSAP text messages addressed to "9-1-1" and "911". Text messaging is provided by mobile phones. Individuals using mobile phones may not know the jurisdiction in which they are located when they send a text-message



for emergency assistance, just as they may not know the jurisdiction in which they are located when they call 9-1-1. Even if an individual does know the jurisdiction in which he or she is located, the time required to identify the proper text messaging address will delay transmission of the message, when seconds may count.

(ii)*Prompt to Call 9-1-1*: When an end user addresses a text message to "9-1-1," a prompt should appear advising the user that a voice call is a faster means of getting First Responders to the caller's location. This must not prevent the sending of a text message to "9-1-1," however.

(iii) *Location Information*: The location of the caller must be available for the purpose of routing the call to the correct PSAP, and for automatically displaying the location at the PSAP.

(iv)*Confirmation of Delivery*: Text messages to 9-1-1 must be given priority routing and provide confirmation of delivery, or alternatively must open a duplex session (chat session) in which both the caller and call-taker can see characters as they are entered by the other.

(v)*Ability of Call-taker to Interrogate Caller Without Significant Delay*: Text message length must be limited, or alternatively the text messaging system must open a duplex session (chat session) in which both the caller and call-taker can see characters as they are entered by the other. If a "caller" is providing information which is not relevant to dispatching First Responders, the call-taker must be able to respond or interrupt the "caller" and ask questions to extract the critical information needed for dispatch.

(vi)*Support Stand Alone Functionality*: The PSAP must be able to receive and respond to the text messages through a stand-alone application running on existing workstations or a separate, stand alone computer. Replacement or upgrade of existing PSAP systems should not be required to take advantage of text messaging functionality.

(vii)*Provide Location Accuracy Information:* If the location technology used to determine the PSAP to which the call should be routed and to identify the "caller" location does not provide GPS-accuracy or better, the message should automatically identify the technology used to determine the location, which PSAP text messaging interface can translate to display a "within \_\_\_ feet" parameter. This information, coupled with the location data, will be important for First Responders seeking to locate the caller, and will also alert the call-taker when additional location information may be necessary to assist First Responders in locating the caller or when additional First Responders may be necessary to assist in locating a caller.

(viii)*9-1-1 Network Compatibility:* Any text messaging system or application made available to the public which can send text messages to "9-1-1" must be compatible with the 9-1-1 Systems deployed in the several states. In the context of a legacy network, this means that the service or application provider would have to operate a call center or relay service, and call the correct PSAP on an administrative line to report information obtained by text message from the "caller." In the case of an NG9-1-1 system, the text messaging system would need to be compatible with the ESInet and PSAP text messaging interfaces, or the text messaging provider would have to provide the NG9-1-1 Data Center(s) with interfaces to permit the system or application to be compatible with the ESInet. PSAPs cannot be placed in the position of having to expend limited resources to obtain equipment or interfaces, and train personnel, to use multiple text messaging systems.

To avoid limiting innovation, the Commission should require that a text messaging system meet these criteria without designating a specific system or application to be implemented.

The Commission should require that wireless service providers route text messages addressed to 9-1-1 to the appropriate PSAP when all of the following conditions are met:

(i) A text messaging system(s) meeting the above criteria has been developed and deployed by the wireless providers, which shall not occur later than January 1, 2015. It is the understanding of BRETSA and the Task Force that implementation of a text messaging system meeting the above criteria can be more efficiently implemented in conjunction with future upgrades to wireless providers' networks. Deployment of NG9-1-1 and ESI-nets will take some time to complete and upgrade of even existing PSAP systems to take full advantage of NG9-1-1 will take even longer. Alternatives for accommodating text messaging by the speech and hearing impaired community are addressed at Section IV below.

(ii) Twenty-five percent market penetration by NG9-1-1 is achieved. Until NG9-1-1 and ESI-nets are available in a sufficient percentage of states and to a sufficient percentage of PSAPs, the limited benefits of text messaging to 9-1-1, will be even further limited by public confusion over where text messaging to 9-1-1 is available. At the same time, jurisdictions which are proceeding with deployment of NG9-1-1 and ESI-nets are investing limited resources, in part to accommodate text messaging to 9-1-1. BRETSA and the Task Force believe that 25 percent is the appropriate threshold for the percentage of states which must have deployed NG9-1-1 and ESI-nets, and the appropriate threshold for the percentage of PSAPS which can dispatch First Responders in response to a text message to 9-1-1. Where a state or other entity establishes a Regional Advanced PSAP (or a "Default Text PSAP" to which text messages to 9-1-1 would be default routed), and that PSAP is able to receive and exchange text messages and timely transmit information regarding the location and nature of the emergency to the Dispatching PSAP, each

such Dispatching PSAP would be deemed to be capable of dispatching First Responders in response to a text message.

(iii) With respect to the obligation of a wireless provider to make text messaging to 9-1-1 available to any specific PSAP, either the PSAP shall have certified that it is capable of receiving and exchanging text messages and dispatching First Responders in response to a text message; or a state 9-1-1 authority, NG9-1-1 Data Center operator, or coordinating body in the state may make such certification if a statewide text messaging solution such as NG9-1-1 having been deployed to all PSAPs in the state or a Default Text PSAP has been established to serve all PSAPs in the state.

**C. Video calls to The PSAP Will Provide Limited Benefits, Which Are Offset By Its Costs.**

The primary task of the PSAP is to extract from the caller the nature of the emergency and confirm the location of the emergency, so that the appropriate First Responders can be dispatched. This task can be best accomplished by audio call; a plain old telephone call. The transmission of video will not expedite but will in most cases delay the provision to the PSAP of the necessary information to dispatch the appropriate First Responders, and delay the First Responders arriving on scene when seconds count.

In addition to delaying dispatch of First Responders, the transmission of video will require substantial investments in transmission and data storage capacity, diverting resources from more effective investments in public safety. Video calls to 9-1-1 will likely place “callers” at risk, and impact the effectiveness and costs of PSAP personnel. It will also create false expectations for the public.

## **1. Advantages Of Video Calls To 9-1-1.**

The primary advantage of video calls to 9-1-1 will be in the establishment of additional data sources for use by investigators, prosecutors, defense attorneys and insurance companies in investigating crimes or assigning liability for accidents. Video calls and video or photographic attachments will be of limited use to PSAPs in accomplishing their primary mission of extracting from the caller the nature and location of the emergency so that appropriate First Responders may be dispatched.<sup>14</sup>

In fact, if a call-taker has to watch a video to determine the location or nature of the emergency and the First Responders to dispatch, rather than to make this determination by questioning someone on the scene, the dispatch of those First Responders will be delayed. If call-taker generally must watch videos to determine the information necessary for dispatch, call-taker and PSAP efficiency will suffer and additional staffing may be required.

A call-taker watching a video may not get reliable information with which to dispatch First Responders. See, for example <http://www.youtube.com/watch?v=8slEPV9LyS0>, a video of a news reporter paddling a canoe in a flooded area, until two men walk through the frame demonstrating that the water is only ankle deep. Resolution of the video will affect its usefulness. The photographic process also tends to compress distances, further distorting the images from which a call-taker would have to discern the information necessary for dispatch. A person on scene can provide more complete and accurate information for purposes of dispatching First Responders than will be provided by a person on scene. Video cannot smell gas, sense heat, or provide 360 degree, five-sense, situational awareness.

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<sup>14</sup> The prospect of video to the PSAP is alluring, particularly given the uses of video by law enforcement agencies in *fictional* television programs. Service providers supplying the bandwidth to transmit video in real time, and vendors of data storage arrays to store the video will benefit from the transmission of video to the PSAP, without benefits to public safety.

A call-taker is not going to view video from multiple sources to determine traffic levels along alternative routes for available First Responders who might be dispatched to the scene of an incident to determine which First Responder could reach the scene soonest. For an individual to make this determination would likely take longer than it would for any of the available units in the general area to reach the scene. Such calculations can be timely made by CAD systems with access to traffic sensors.

Video to the PSAP may have some utility after First Responders have been dispatched. Video may be useful in provision of EMD, although PSAP call-takers are not paramedics and EMD is usually provided through card or software systems designed by medical professionals to enable call-takers to proceed through a series of questions and a decision tree to determine what First Aid should be given, and then to direct a person at the scene in how to administer the First Aid. Call-takers providing EMD are not making their own professional assessment of the situation or making their own determination as to the First Aid which is appropriate. They do not have the training and expertise to do this, and if they did they might well be employed as a paramedic rather than as a dispatcher.

## **2. Disadvantages Of Video Calls To 9-1-1.**

The disadvantages of video calls to 9-1-1 will outweigh the advantages in most cases.

A significant disadvantage of video calls to 9-1-1 is the cost of implementation.

Transmission of video in real-time requires available bandwidth on all portions of the transmission path from the caller to the PSAP to deliver the video signal as it is captured by the caller. Delays for buffering of data can make the audio portion of the call unintelligible in addition to interrupting the video. Bandwidth limitations can cause a video call to be dropped

altogether. Degradation of video quality to match the bandwidth available may eliminate what little utility may exist in delivering the video to the PSAP in the first place.

The example was given above of the situation in which a single accident along a major commuter route in the Boulder area prompted over 120 calls to 9-1-1, as people passing the accident continued to call until First Responders reached the scene.<sup>15</sup> This had the potential to block calls to the about other incidents both to the PSAP to which the calls would initially be routed, and to the PSAPs to which overflow calls were routed. If video calling were available and callers chose to make video calls and send video of the accident scene to 9-1-1, significant bandwidth would be required to transmit those calls, when the video would be of limited utility, if any.

The cost of (i) building a mission critical, redundant and diverse-routed network with the bandwidth to handle multiple video calls while maintaining a P.01 Grade of Service, even allowing for flexible routing in call-overflow situations, and (ii) data storage systems capable of storing multiple video calls; would divert resources from other purposes that would be of greater benefit to public safety and the general public.

Another disadvantage of sending video to the PSAP is that it will put callers at risk. Engaging in a video call while driving, such as to send video of an accident to 9-1-1, would require that the driver's eyes and attention be focused on the video display of the camera phone, resulting in a significant likelihood of additional accidents occurring.

Even if the caller was not driving while taking and sending a video, the focus of the caller on the image within the cameras frame of view, the camera-phones display, would place the

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<sup>15</sup> This is not to be discouraged; it is more important that multiple people call than that people not call 9-1-1 on the assumption that someone else has called. The call volumes are something which the 9-1-1 system and PSAPs must be capable of handling, so that calls about separate incidents are not blocked.

caller at risk. Consider, for example the case of Ivan Lester McGuire who, in 1988, became so focused on photographing other skydivers that he forgot to put on his own parachute and fell to his death.<sup>16</sup> Reality and sports TV are rife with incidents in which photographers become so focused on their view screen that they are “blindsided” by action occurring outside of their view screen, or are even “run over” by the very people, vehicles or animals they’re photographing. Amateur photographers acting in the excitement of an emergency are unlikely to maintain their situational awareness, and there is a real and significant potential for them to become additional victims in many types of incidents.

People using cameras which are incorporated into their phones typically hold the phone away from them, in order to see on the view screen the image they are capturing. The distance and angle at which the phone is held can adversely affect the audio quality of the caller’s voice, and make it more difficult for the caller to hear the dispatcher and respond to the dispatcher’s questions. It can also cause the microphone to capture wind and other noise in the environment, also making more difficult the voice communication between the caller and call-taker. It is this voice communication which is most effective for the call-taker to acquire the information essential for dispatch of First Responders.

When a PSAP call-taker answers a 9-1-1 call, the call-taker is already multi-tasking, entering data into the CAD system while speaking with the caller, reviewing other incidents identified on the CAD screen which are already being handled by the PSAP to determine if the incident which is the subject of the current call has already been reported, doing “re-bids” to the ANI/ALI database to update the caller’s location and viewing the caller’s location to confirm that

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<sup>16</sup> Associated Press, “Skydiver tapes his fall to death without chute,” *Houston Chronicle*, April 6, 1988, accessed December 10, 2011, [http://www.chron.com/CDA/archives/archive.mpl/1988\\_534933/skydiver-tapes-his-fall-to-death-without-chute.html](http://www.chron.com/CDA/archives/archive.mpl/1988_534933/skydiver-tapes-his-fall-to-death-without-chute.html).



it matches the location given by the caller, reviewing premises history, etc. Having to watch a video to discern information necessary for dispatch would interfere with the call-taker's completion of other necessary functions, and delay dispatch.

In the event of an incident which prompts multiple calls, call-takers will often answer the phone and ask if the caller is calling about the specific incident, and if the caller says yes will ask if they were a witness to the incident. If the caller is calling about an incident which has already been reported, and is not a witness, the call-taker will say something like "Thank you, we're responding," and hang-up. The purpose in that instance is to clear the lines of calls related to instances which have already been reported, so that calls can be received about other emergencies. The transmission of video calls to 9-1-1 will impede the ability of call-takers to clear lines of multiple calls about the same incident.

Notwithstanding the reality of PSAP operations, the public may have a perception of PSAP personnel huddled around a monitor viewing the video being sent. The public may have an expectation of the call-taker seeing in the video potential hazards to the caller and providing a warning. In fact the dispatcher will likely *not* be watching the video but will be attempting to interrogate the caller in the audio portion of the call to obtain the critical information necessary for dispatch while viewing CAD data screens, for example. This difference between expectation and reality could result in claims being asserted against PSAP agencies and personnel, again diverting resources from uses which would provide greater public safety benefits to a greater number of people. Callers may even believe that it is more important to send video images than to speak with the call-taker, and delay dispatch of First Responders.

Finally, and significantly, BRETSA and the Task Force are concerned that viewing videos of incidents is likely to adversely affect the effectiveness, health, number of stress related health claims, and retention of PSAP personnel.

It is important that PSAP personnel maintain a calm and reassuring demeanor in dealing with callers to 9-1-1, who are often excited and/or upset by the incident about which they are calling. Whether a hysterical mother who has called because her child has stopped breathing or an excited witness to a car accident, the call-taker must be able to calm the caller down to obtain the information necessary to dispatch the First Responders indicated by the nature of the emergency, and to proceed to EMD if necessary. BRETSA believes that people who have the types of personalities to want to be in the middle of the action, addressing these situations, and can deal with the stresses, are the types of people who become First Responders. Call-takers tend to have different personality types and often would not be able to maintain the demeanor necessary to operate effectively if presented with visual images of certain incidents. Adding video to the mix would be adding additional types of stress to an already high-stress profession.

In the after-action debriefing after a recent plane crash at the Boulder County Airport, in which psychologists participated, even experienced First Responders became emotional about seeing human body parts strewn across the scene of the incident, and PSAP personnel who participated in the incident also became emotional discussing their experiences in the incident, even though they had not seen these images. These images would be of little use to the call-takers or dispatchers in determining the nature and location of the emergency and dispatching the First Responders; yet these sensational images are the very images excited and upset non-professionals would likely to focus on in sending video to 9-1-1.

To provide additional perspective, the Boulder County PSAP operated by the Boulder County Sheriff's Department's most recent hiring notice produced 350 applicants for call-taker/dispatcher positions. Applications are reviewed for those which are properly completed, and candidates who properly completed the application form are then given a typing test and a test to evaluate their ability to multi-task. This typically eliminates about 50 percent of the applicants. The remaining applicants are then given psychological tests, and the psychologists who conduct the tests advise the people who will interview the candidates of matters to address during the interviews. Interviews and background checks are also conducted. At the end of this process, only three of the applicants were hired, and 50 percent of hires for PSAP positions typically quit during the extensive training required to become a call-taker/dispatcher.

After the expense of the hiring and training process, one percent or fewer of candidates for call-taker/dispatcher positions made it through the hiring and training process. This experience is not only consistent with the experience of PSAPs across Colorado, but with NENA statistics nationwide. To require that the individuals who take these positions also be able to maintain their calm demeanor while viewing graphic, upsetting and exciting images from the scene of emergencies can only result in reducing the percentage of applicants who would be suitable for positions in the PSAP. BRETSA and the Task Force also believe that PSAP call-takers would suffer a higher percentage of stress related health issues and more frequently take stress-related leaves of absence, and there would be a greater level of employee turnover.

### **3. Conditions For Provision Of Video Calls To 9-1-1.**

In light of the above, video calls to the PSAP should be discouraged unless a call-taker specifically requests a specific caller to send images.

The criteria for the Commission to impose a requirement that providers route video messages and attachments addressed to 9-1-1 to the PSAP should include the following:

(i)*Abbreviated Addressing*: The capability exist to route video messages addressed to "9-1-1" and "911." Video calls to 9-1-1 will primarily be provided by mobile phones. Individuals using mobile phones may not know the jurisdiction in which they are located when they make a video call for emergency assistance, just as they may not now the jurisdiction in which they are located when they call 9-1-1.

(ii)*Prompt to Call 9-1-1*: When an end user seeks to initiate a video call to "9-1-1," a prompt should appear advising the user that a voice call is a better means of getting First Responders to the caller's location, and that the video may not be displayed in the 9-1-1 call center. This will not prevent the sending of a video message to "9-1-1," however.

(iii) *Location Information*: The location of the caller must be available to for the purpose of routing the call to the correct PSAP, and for automatically displaying the location at the PSAP.

(iv)*Ability To Deliver Only The Audio Portion Of The Call To The PSAP, And Replace The Video With a Link*: Any system or application for addressing of a video call or transmission of a video attachment to 9-1-1 and delivery of the call to the PSAP should allow for the video message to be recorded and stored at the NG9-1-1 Data Center or even at the MSC, and for delivery of only the audio portion of the call to the PSAP. The audio portion of the call to the PSAP should be accompanied by a link enabling the PSAP or other interested parties to access the full video message if required. It should be left to the discretion of the appropriate authorities in each state to determine (i) whether this capability is used in the ordinary course of business or only in cases of network congestion, (ii) whether the full video message is stored at the NG9-1-1

Data Center(s), the MSC, or some other location, and (iii) whether the full video is to be accessed via the ESInet, the public Internet, or other facilities.

(v)*Support Stand Alone Functionality*: The PSAP must be able to receive the video call through a stand-alone application running on existing workstations or a separate, stand alone computer. Replacement or upgrade of existing PSAP systems should not be required for the PSAP to receive a video call.

(vi)*Provide Location Accuracy Data*: If the location technology used to determine the PSAP to which the call should be routed and to identify the "caller" location does not provide GPS-accuracy or better, the message should automatically identify the technology used to determine the location, which PSAP systems can translate to display a "within \_\_\_ feet" parameter. This information, coupled with the location data, will be important for First Responders seeking to locate the caller, and will also alert the call-taker when additional location information may be necessary to assist First Responders in locating the caller or when additional First Responders may be necessary to assist in locating a caller.

(vii)*9-1-1 Network Compatibility*: Any video calling system or application made available to the public by any party must be compatible with the 9-1-1 Networks deployed in the several states. The video call system must be compatible with standards deployed in the PSAPs and across the ESInet, or the video call provider must provide the NG9-1-1 Data Center(s) with interfaces to permit the system or application to be compatible with the ESInet. PSAPs cannot be placed in the position of having to expend limited resources to obtain equipment or interfaces, and train personnel, to use multiple video calling systems.

To avoid limiting innovation, the Commission should require that a video call system or application meet these criteria without designating a specific system or application to be implemented.

The Commission should require that wireless service providers route video calls addressed to 9-1-1 to the appropriate PSAP when twenty-five percent market penetration by NG9-1-1 is achieved. Until NG9-1-1 and ESInets are available in a sufficient percentage of states and to a sufficient percentage of PSAPs, and a sufficient percentage of PSAPs request service providers deliver video calls to 9-1-1, the limited benefits of video calls to 9-1-1 will be even further limited by public confusion over where video calls to 9-1-1 are available. At the same time, jurisdictions which are proceeding with deployment of NG9-1-1 and ESInets may be investing limited resources to accommodate video calls to 9-1-1. BRETSA and the Task Force believe that 25 percent is the appropriate threshold for the percentage of states which must have deployed NG9-1-1 and ESInets, and the appropriate threshold for the percentage of PSAPS which will accept video calls to 9-1-1. Where a state or other entity establishes a Regional Advanced PSAP (or a “Default Text PSAP” to which video calls to 9-1-1 would be default routed), and that PSAP is able to receive and view video calls and timely transmit information regarding the location and nature of the emergency to the Dispatching PSAP, each such Dispatching PSAP would be deemed to be accepting video calls.

The criteria for implementation of video calls to 9-1-1 discussed above includes the capability of the NG9-1-1 Data Center to record the video portion of a video call and transmit only the audio portion of the call to the PSAP, including with the audio portion of the call a link to the video stored at the Data Center. This link will permit the PSAP call-taker to access the video or attachment if the call-taker determines that in the context of a specific call it will be

useful to view the video. The video could be accessed either via the ESInet or the public Internet in the event that ESInet bandwidth was limited. The link will also permit investigators, prosecutors, defense attorneys and insurance companies to subsequently access the video or other attachment via the public Internet if useful for their purposes. Each state and/or jurisdiction should make its own determination as to whether to (i) deploy an ESInet with capacity to transmit video calls to each PSAP, (ii) transmit video calls to the PSAPs by default and store the video portion of the call at the NG9-1-1 Data Center only when available network capacity becomes limited, or (iii) to transmit only the audio portion of the call to the PSAP by default and have the call-taker select when to access or download the video portion.

Alarm companies are already making video from residential premises surveillance cameras available in real time to customer computers and smartphones. It thus seems likely that among the first entities to transmit video to PSAPs will be alarm companies, who will offer that service to customers at a premium price point. These companies would therefore earn a profit at the expense of public safety agencies developing the network bandwidth and PSAP systems to receive and store the video. There are also consumer video monitoring systems which also allow the consumer to remotely monitor video of their premises, for example, on computers or smartphones. Consumers utilizing these systems will also be able to transmit such video to the PSAP. Subject to such limitations as may be adopted by state legislatures, it should be at each PSAPs discretion whether to accept video or links to video, particularly from commercial enterprises. Subject to such limitations as may be adopted by state legislatures, each PSAP should be free to negotiate the terms on which it will accept video from or on behalf of a commercial provider. PSAPs should have the opportunity to offset their costs through fees

charged to commercial entities transmitting video, or links to video, to the PSAP for profit, and to persons who may impose significant or disproportionate costs on the PSAP.

**D. Data Transmission to The PSAP May Provide Substantial Benefits, But Will Generally Require Intermediary Services.**

One of the advantages of NG9-1-1 with its Data Center and ESInet is that it will unleash the creativity of applications developers who have developed the thousands of smartphone applications, to develop applications to improve public safety. Public safety agencies cannot be expected to incur the expense of procuring and implementing systems or software to receive data from or operate with these applications. PSAP personnel cannot reasonably be expected to be trained to use or interpret data provided by these types of applications. These applications also have the potential to place significant burdens on PSAPs and First Responders for the commercial benefit of the system or application provider.

As with alarm system providers, PSAPs must be able to limit the burdens imposed and recover costs imposed by commercial providers and by applications which impose significant or disproportionate costs on the PSAP.

**1. Advantages Of Data Transmission To 9-1-1.**

The advantages of data transmission to 9-1-1 may only be limited by the imagination and entrepreneurial quest in America to find solutions to problems, and more efficient ways of accomplishing important tasks or goals.

Alarm companies, Automatic Crash Notification system providers, and even Telephone Relay Services are currently received over ten-digit administrative lines rather than the 9-1-1



network.<sup>17</sup> NG9-1-1 and its ESInet should allow CAD data pertaining to a transferred call, CAD incident files for various types of alarm data, and other types of data to be transmitted to PSAPs and imported into CAD systems without intervention by PSAP personnel.

A presentation made to the Colorado 9-1-1 Task Force about a smartphone application which would know a non-English speaker's native language, and enable the NG9-1-1 Data Center to route the call to a PSAP with a call-taker fluent in the language (to conference in on the call with a call-taker at the Dispatching PSAP, or to operate as a remote call-taker and transmit CAD incident data to the correct PSAP), or get a commercial translation firm with an interpreter with a fluent in the language on the line, during call-setup. Currently, if a non-English speaker calls 9-1-1, the call-taker recognizes that the caller is not speaking English and conferences in an interpreter service. A call screener at that service who is experienced at recognizing languages then tries to identify the language being spoken and get the appropriate interpreter on the phone. Transmission of the language identification with the call and addressing the need for an interpreter during call set-up should reduce the time before the call-taker can begin to gather the information necessary to dispatch First Responders from minutes, to seconds. However the transmission of such language-preference data must be pursuant to criteria which will assure that the data is useful, and does not require PSAPs to incur expenses for multiple systems, software or training, or to support commercial ventures.

Additional services and systems based on smartphone applications are likely to be developed. Researchers have developed a contact lens that can measure glucose levels, and

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<sup>17</sup> Certain ACN providers are reportedly implementing solutions which will allow calls to be transmitted to PSAPs over the 9-1-1 trunks or system. APCO's Project ASAP will permit premises alarm monitoring companies to transmit alarm data to PSAP CAD systems without requiring alarm personnel to call the PSAP and take up the time of a PSAP call-taker.

contains a radio transmitter.<sup>18</sup> This could lead to a smartphone linked by Bluetooth or similar wireless link to a contact lens device worn by a diabetic. A smartphone application would monitor glucose levels, alert the wearer when glucose levels moved out of the acceptable range and the wearer needed to take insulin, for example. If the smartphone application detected that glucose levels continued to move further out of the acceptable range or reached a point where the wearer would likely be unconscious or in distress, the smartphone could automatically “call 9-1-1” and transmit data regarding the monitored blood levels.

Similarly, if a person has a history of heart attacks, a smartphone application might monitor by Bluetooth the equivalent of EKG monitor sensors worn by the individual. When the smartphone application detects readings indicating that the person is in distress, the smartphone could automatically “call 9-1-1” and transmit data regarding the readings.

In actual operation, however, most PSAPs would not want such personal alarms to automatically dial 9-1-1 and transmit data regarding blood glucose levels or EKG readings. Given all of the potential applications and services which may be developed, it may not be feasible for PSAPs to obtain the software and provide the training to interpret the data in the first instance. PSAP call-takers who are hired and trained for PSAP operations should not be expected to also interpret medical or other data. In addition, the potential for false alarms would waste PSAP resources. On the other hand, some PSAPs may find an opportunity to develop revenue streams to provide additional support for PSAP and agency operations, particularly if their provision of services would be protected by governmental immunity under applicable state law.

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<sup>18</sup> Langley, A.R., et al, (2011), A single-pixel wireless contact lens display, *J. Micromech. Microeng.* 21 (125014), accessed November 24, 2011, [http://iopscience.iop.org/0960-1317/21/12/125014/pdf/0960-1317\\_21\\_12\\_125014.pdf](http://iopscience.iop.org/0960-1317/21/12/125014/pdf/0960-1317_21_12_125014.pdf).

Rather than having applications or services automatically dial 9-1-1, the application or service provider should instead be required to have a call center or service center with which such smartphone applications would connect in the event of an alarm. An operator at the alarm center trained to interpret the data should be required to attempt to contact the customer to determine if the call is a false alarm or the emergency can be resolved by the customer taking action (such as taking medication). Only in the case that the call center operator is unable to make contact with the customer, or the customer is unable to take effective corrective action *and* is at risk of imminent harm, should the call center operator contact or transmit the data to the PSAP. With NG9-1-1 and the ability of the call center operator to connect through the NG9-1-1 Data Center, the call center operator should transmit a CAD incident file to the PSAP to report the alarm. (In the event the call center operator makes contact with the afflicted customer by phone, the call center operator should have the option and ability to transfer the call to the PSAP for the call-taker to speak directly to the afflicted customer.)

## **2. Disadvantages Of Data Transmission To 9-1-1.**

The disadvantages of data transmission to 9-1-1 include the potential for multiple types of data from a panoply of applications and services, requiring significant PSAP investment in software, training and systems to interpret and use the data. Transmission of data to 9-1-1 may require PSAP capital investment in support of commercial services or products. These concerns are addressed by the conditions which should be placed on transmission of data to 9-1-1, which are intended to place the cost of such software or services on those who would profit and benefit from them.

### **3. Conditions For Provision Of Data Transmission To 9-1-1.**

The criteria for the applications or services to transmit data to the PSAP, or autodial 9-1-1, should include:

(i)*Addressing*: The capability to route data to "9-1-1" or its equivalent with a location object embedded in the data stream, or to address the data packets to a specific PSAP based upon the location of the caller within the PSAPs jurisdiction.

(ii)*Application Reference Numbers*: NG9-1-1 Data Center(s) should only accept data which includes an approved Application Reference Number in the protocols or message header. An Application Reference Number would be a unique number assigned by a standards organization to each application or service which might transmit data to a PSAP via the ESInet, and which includes a code identifying the application author or service provider. The ESInet, NG9-1-1 Data Centers and PSAPs would reject and discard data which did not include an Application Reference Number, or which the relevant authorities determined would not be accepted within the jurisdiction. Each PSAP would be assigned an Application Reference Number, so that when data was transferred to another PSAP, the ESInet and the receiving PSAP would know that the data was from an authorized user, and could identify the PSAP transmitting the data. This would avoid the ESInet bandwidth being devoted to applications or services which the relevant authorities have decided not to accept, and PSAP systems and records being cluttered with such data. The "relevant authorities" which decide which applications to reject would be (i) the parties responsible for operation of the state 9-1-1 system and ESInet, whether a state 9-1-1 coordinator or a body such as the Task Force, and (ii) each individual PSAP.

(iv) *Location Information*: The location of the caller must be available to for the purpose of routing the data to the correct PSAP, and for automatically displaying at the PSAP the location of the “caller.”

(v) *Provide Location Accuracy Information*: If the location technology used to determine the PSAP to which the call should be routed and to identify the "caller" location does not provide GPS-accuracy or better, the message should automatically identify the technology used to determine the location, which PSAP systems can translate to display a "within \_\_ feet" parameter. This information, coupled with the location data, will be important for First Responders seeking to locate the caller, and will also alert the call-taker when additional location information may be necessary to assist First Responders in locating the caller or when additional First Responders may be necessary to assist in locating a caller.

(vi) *Ability To Deliver Links To Extensive Data*: In the event that purpose of the application or service is to provide data, such as the medical records of a person who has called 9-1-1, or the amount of data exceeds a certain file size, a link should be provided in lieu of the actual data file. First, this will limit the bandwidth requirements for the network and data storage systems, reducing costs. Second, in most cases First Responders will assess and respond to the situation when they arrive, and will likely not review medical or other information before they arrive at the scene of an incident. If the data exceeds a few megabytes, it is unlikely the First Responders *could* review this data in any event. Third, some members of the Task Force envision that in an NG9-1-1 environment, the PSAP could become an information hub routing information related to an incident to emergency rooms, health care providers, insurance companies, etc. In the role of a data hub, however, it is not necessary to transmit all data over the ESInet and store copies of all data at the PSAP, when the PSAP can instead transmit only links

to the data. By transmitting the links, which should be a fraction of the size of even a small data file, network capacity will be kept available for 9-1-1 “calls,” and the cost of the network and PSAP data storage systems can be reduced.

(vii)*Call Center Operation:* Parties providing to the public systems or applications capable of auto-dialing a number or automatically sending a message or data upon the occurrence or measurement of certain conditions or events, should be prohibited from auto-dialing 9-1-1 or automatically transmitting the message or data to a PSAP, without the specific written consent of the PSAP to which the call, message or data would be transmitted. The system or application should instead auto-dial or send the message or data to a private call center (i) capable of confirming the alarm or other condition prompting the auto-dialing of the number or automatic transmission of the message or data, (ii) capable of interpreting the data or advising the user of the service of appropriate actions in response to the alarm or condition, and (iii) which will contact the appropriate PSAP and provide the incident data necessary for dispatch of First Responders only if the call center is unable to contact the customer of the service to verify emergency or the customer is unable to effectively resolve the situation and is at risk. Applications such as that which would identify the language of the caller and get an interpreter on the line during call setup, would not require a call center but would require approval or PSAPs and parties responsible for the state NG9-1-1 system.

(viii)*9-1-1 Network Compatibility:* Any system or application which will transmit data to an NG9-1-1 Data Center or PSAP must be compatible with standard NG9-1-1 Data Center systems and ESInets, or the provider of the system or application must supply to the NG9-1-1 Data Center, at the provider’s sole cost and expense, the systems or software interfaces necessary to convert the data to a format compatible with such standard NG9-1-1 systems and ESInets.

#### **IV. 9-1-1 For The Speech And Hearing Impaired.**

Telecommunications Relay Services (“TRS”) originally provided a means for speech and hearing impaired individuals to place a TTY call to a TRS provider, where a Communications Assistant (“CA”) places a call to a person without a speech or hearing impairment and speaks the TTY message to the called party, and transmits the response to the speech and hearing impaired person by TTY. The Commission has subsequently authorized Video Relay Services, in which the speech and hearing impaired individual communicates with the CA by American Sign Language (“ASL”) over a video connection; and IP Relay Service in which speech and hearing impaired individual communicates with the CA by text over the Internet, rather than a TTY device.

The speech and hearing impaired community now largely uses text messaging over wireless services instead of TTY, because smartphone text messaging is cheaper and more portable than TTY devices, and ubiquitous. The FCC should accordingly amend its rules regarding TRS to provide for TRS to be provided for speech and hearing impaired individuals communicating with the CA by text messaging, including SMS text messaging. For 9-1-1 calls, the CA would be required to assist the caller in accessing smartphone GPS information or web-based services to identify the caller’s location, if necessary for the CA to contact the correct PSAP.

Supporting this is the fact that only about 1% of applicants for PSAP positions are eventually hired and complete training for those positions, *without* employment criteria including any specific experience or training in communicating with speech and hearing impaired individuals. Even though call-takers are trained in communicating by TTY, many PSAPs receive TTY calls only infrequently. Meanwhile, the Commission’s Rules require, *inter alia*, that all

CAs (i) be sufficiently trained to effectively meet the specialized communications needs of individuals with hearing and speech disabilities, (ii) have competent skills in typing, grammar, spelling, interpretation of typewritten ASL, and familiarity with hearing and speech disability cultures, languages and etiquette, and (iii) are qualified interpreters able to interpret effectively, accurately, and impartially, both receptively and expressively, using any necessary specialized vocabulary. See, 47 C.F.R. § 64.604 (a)

## **V. The Role Of The Emergency Operations Center.**

The Commission addresses in the NPRM the potential for text messaging to provide emergency communications during major disasters such as the recent earthquake and hurricane which struck the Eastern Seaboard, and other major emergencies in which voice service is interrupted blocked by calling levels. However, Emergency Operations Centers (“EOCs”) are placed in operation during such major disasters or emergencies, and are generally charged with coordinating the response to such emergencies and handling communications related to the emergency.

In Boulder County, as in Colorado generally, the County EOCs are most often placed in operation for wildfires, tornadoes, or flooding affecting a portion of a county, but rarely affecting an entire county. In the case of a wildfire, the Boulder County EOC will be activated when the fire becomes serious enough or large enough that (i) additional coordination among local and federal firefighting assets are required, and (ii) the County PSAP and related PSAPs are receiving a significant volume of calls related to the fire. Once activated, the EOC provides Incident Command System emergency and disaster response. The EOC's primary purposes are to develop and maintain awareness of the situation for decision makers, to make tactical decisions near the emergency, and to coordinate support for the First Responders.



When activated due to a wildfire, for example, the Boulder County EOC uses local media to publish a 10-digit telephone number for people to call with respect to the fire. Once the EOC telephone number is announced, the PSAPs see an almost immediate drop in the level of fire-related calls. While the PSAP continues to receive some calls related to the fire, this drop in the level of calls to the PSAP frees PSAP lines and personnel to handle incidents unrelated to the fire. The EOC continues to coordinate with the PSAP for radio dispatching of First Responders.

The issue of whether text messaging in the event of a natural disaster or large-scale emergency can allow people to contact 9-1-1 when voice service is interrupted or blocked due to calling volumes, should include discussion of the role of the EOC and the availability of such alternative methods of communicating with the EOC.

In Colorado, and we believe in most areas of the US, calls dialed to “1-1-2,” the European equivalent to “9-1-1,” are also routed to the PSAP with authority to dispatch First Responders to the caller’s location. The Commission should examine in this docket whether calls to “1-1-2” could be routed to the PSAP in the ordinary course, dynamically re-routed to the EOC once the EOC is activated, and routed back to the PSAP after the EOC is deactivated. This would allow the EOC to publish the three-digit number 1-1-2 for people to call regarding the emergency for which the EOC has been activated. This number will be more easily remembered during successive disasters or large-scale emergencies. People calling 1-1-2 with respect to the large-scale emergency prior to activation of the EOC, or after deactivation of the EOC, will have their calls routed to the PSAP. During operation of the EOC, the calls will be routed to the EOC. When text messaging to 9-1-1 is made available, it should also be made available to 1-1-2.

The Commission should examine whether dynamic rerouting of 1-1-2 calls to the EOC can be implemented end office switch, or would best be implemented at the NG9-1-1 Data

Center. Calls to 1-1-2 are already routed to the appropriate PSAP based on selective router data bases, or the LIS/ALI in an NG9-1-1 environment. The flexible routing capabilities of NG9-1-1 may permit the routing of 1-1-2 calls to the appropriate EOC over the public switched telephone network, or alternative dedicated or private line facilities due to potential congestion of the ESInet and PSTN.

To use the case of Hurricane Irene which struck the Washington, D.C. Metropolitan Area in August as an example; prior to the Hurricane reaching the area, officials could have begun using broadcast media covering the larger metropolitan area to announce that people should call 1-1-2 to report storm-related damage, service outages, or emergencies, but to continue to use 9-1-1 to report non-storm related emergencies. The Washington, D.C. broadcast market covers a number of different states, cities and counties. For those jurisdictions which use the EOC to provide additional lines to receive calls from the public regarding calls related to the emergency for which the EOC is activated, will have such calls automatically rerouted to the EOC once the EOC is activated, without having to wait to notify the public when calls should be made to the EOC number. Prior to activation of the EOC, calls regarding storm-related emergencies will continue to be routed to the PSAP. For those jurisdiction which prefer to have storm-related calls from the public continue to go to 9-1-1, the jurisdiction would not request that the number 1-1-2 be re-homed to the trunks into its EOC and calls would continue to go to its PSAP. If a city or county in the western part of the media market, or which received the Washington, D.C. broadcast signals via translator or cable was not sufficiently affected by the storm to activate its EOC, public safety officials would not need to take any action and calls to 1-1-2 would continue to be routed to the PSAP. Finally, in view of the number of calls which tend to be generated by such major disasters, some jurisdictions might choose to supplement PSAP

capacity by setting up temporary phone banks or, for example, using existing phones in the office building of a government agency which will be shut down during the disaster as an additional phone bank, and routing or re-homing the number 1-1-2 in the jurisdiction to the trunks for the phone bank or office building. After the Hurricane moved through the area and EOCs or supplemental phone banks were deactivated, the number 1-1-2 would be re-routed or re-homed to the PSAP.

If assignment of the three-digit dialing code 1-1-2 to local EOCs during EOC activation is feasible; the decision whether to have the dialing code assigned to the EOC should reside with each local public safety authorities.

## **VI. Call Prioritization.**

The Task Force and BRETSA certainly agree that calls and text messages to 9-1-1 should be provided access to networks on a priority basis where feasible. The Task Force and BRETSA submit that calls and text messages to the EOC, and Emergency Notification Service (“ENS”) calls should also be provided access to networks on a priority basis, where feasible.

Calls to 9-1-1 and the EOC, and ENS calls should be provided equivalent priority to, but not greater priority than, the Government Emergency Telecommunications Service (“GETS”) and Wireless Priority Service (“WPS”) priority call services for Emergency Managers and First Responders.

Even with 9-1-1 call prioritization, 9-1-1 calls may still exceed network or PSAP capacity and be blocked or go unanswered. This can occur in the cases ranging from local incidents such as automobile accidents on major highways, to major disasters. 9-1-1 service providers have confirmed the capability of deploying 9-1-1 Intercept Services which, in the former instance

involving localized call blocking, would answer calls to 9-1-1 received through cell towers in the vicinity of the accident and play a message such as:

First Responders are responding to the accident involving a red pickup truck and blue station wagon near the Broadway Exit of Westbound I-70. If you are calling about another incident, please press '1' to be connected to a 9-1-1 Operator. If you are a witness to the accident, please press '2' and leave your contact information.

9-1-1 service providers have indicated that such a 9-1-1 Intercept Service need not be implemented in the NG9-1-1 Data Center, but could even be pushed out to wireless carriers mobile switching centers ("MSCs").

In the latter case, when calls are blocked due to fiber cuts or other network outages, or there is generalized call blocking due to call volumes, such as in a natural disaster, the Intercept Service might play a message such as:

Due to the current emergency, we are unable to complete your call to 9-1-1. At the tone, please state your location and the nature of your emergency, and we will attempt to identify alternative communications facilities which remain available to transmit your message to First Responders. After leaving your message, please call 9-1-1 over any other communications service to which you may have access.

In this instance, the 9-1-1 Intercept Service would store and forward the messages on a priority basis when service was restored or when call volumes no longer blocked communications. In the case of call blocking of voice circuits, DSL circuits might be available for transmission of recorded Intercept Service messages via the Public Internet to a default PSAP.

Public safety authorities generally disfavor the concept of answering calls to 9-1-1 with a recording. However, in the event local call volumes overwhelm network facilities and block 9-1-1 calls, or major disasters or other large-scale emergencies result in significant interruption of communications services; authorities should be provided with the options of (i) answering blocked calls with a recording directing callers of alternative means by which they may be able to reach the PSAP, and (ii) allowing the caller to record a message on a system which will

automatically attempt to transmit the recording to the PSAP via alternative methods or when service is restored.

## **VII. Statutory And Regulatory Impediments To Deployment Of NG9-1-1.**

In the NPRM, the Commission requests comment "on any legal or regulatory barriers that may exist at the state or local level that could hinder the deployment of NG9-1-1." It is true that some state statutes and regulations specifically contemplate and refer to legacy 9-1-1 technology such as the Selective Router, and might be interpreted to be inconsistent with the provision of NG9-1-1 Service. The 9-1-1 communities in each state can and will lead the effort to update state law and regulation consistent with their particular transition path to NG9-1-1.

The greater barrier to effective deployment of NG9-1-1 is uncertainty over the extent of federal preemption of state regulation of provision of 9-1-1 and related services by wireless and VoIP providers. The issue has been skirted to date by state regulations such as 4 CCR 723-2 - 2130(b) which provides: "To the extent these rules [pertaining to 9-1-1] specifically refer to wireless carriers as a condition of interconnection with any BESP [Basic Emergency Service Provider], such rules apply to wireless carriers *who agree to comply with them.*"

The Commission should either outline areas of technology-neutral regulation of such service providers compliance with public safety imperatives which would not interfere with federal policy, or impose necessary regulations which the States have been preempted from adopting or enforcing. Specific areas of regulation which are essential to effective and ubiquitous 9-1-1 and ENS Services include:

(i) Requirements that all service providers, including wireless and VoIP providers, collect and remit the Emergency Telephone Surcharge imposed on wireline providers to fund 9-1-1 service.

State statutes and regulations should not be limited to wireless and VoIP providers which “agree to comply with them.” Because the requirement is imposed on wireline providers, it is technology neutral.

(ii) Requirements that service providers collect and remit 9-1-1 surcharges on wireline, wireless and *broadband* service (per each 512kbps increment of upstream speed).

9-1-1 Authorities face difficulties in even identifying VoIP providers with customers in their jurisdictions, let alone in collecting the Emergency Telephone Surcharge. 9-1-1 Authorities must therefore be able to assess the surcharge on the network connection over which VoIP services are provided, to avoid VoIP customers enjoying the benefit of 9-1-1 services to which they do not contribute.

(iii) Requirements that service providers, including wireless and VoIP providers, provide ANI/ALI data for their customer’s primary service locations.

Some ENS services populate their ALI/ANI databases from the 9-1-1 ANI/ALI database. Wireless and VoIP numbers are not included in the 9-1-1 ANI/ALI databases, however. Although some ENS providers make available a web page through which residents of a jurisdiction can register their VoIP or wireless phone number for ENS service at their residential and/or business address, a relatively small percentage of people have registered their wireless and VoIP numbers with the services.

The omission of wireless and VoIP telephone numbers from the ENS databases is increasingly becoming a problem as people cancel their wireline service in favor of wireless service only, and as VoIP market share increases. This matter was highlighted by Comcast’s recent removal of its VoIP customers from the Colorado ANI/ALI database, and routing calls to its VoIP customers through service provider TCS. Comcast now offers extracts from its database

for use in ENS services for a fee. Other VoIP providers, like wireless providers, do not provide ANI and ALI information at all. If each such provider were to make its customers' ANI/ALI data available for a similar fee, there would be a significant impact on PSAP budgets.

ENS services have become an important tool for public safety authorities. While services are proposed which would involve the broadcast of text messages to all wireless phones within range of cell sites specified by public safety officials, these are not equivalent to ENS services. For example, ENS services can be used to provide evacuation notices to specific homes or neighborhoods in the path of a wildfire when law enforcement officers are in place to prevent unauthorized persons from returning to those neighborhoods. Staging evacuations on a neighborhood-by-neighborhood basis can also limit the potential for traffic congestion which could impede the evacuation or the movement of firefighting resources. Some ENS services allow telephone numbers associated with a specific address to be excluded from the notification, so that in a barricade or hostage situation evacuation notices or other instructions can be provided to neighbors of the subject property, but not to phone numbers associated with the subject property in which the suspect is barricaded or has taken hostages. Thus, ENS services will continue to be an important tool for public safety officials notwithstanding the development of wireless service "broadcast" notifications.

Wireline service providers supply customer ANI/ALI data to the 9-1-1 service provider without charge to the 9-1-1 Authorities, as a cost of business to be recovered in customer rates. The states or the Commission must also require service providers to supply ANI/ALI data to the 9-1-1 service provider or other service provider without charge to the 9-1-1 Authorities, as a cost of business to be recovered in customer rates. Such requirements are essential to maintain the utility of the ENS service, and would in fact be technology neutral. Wireless and VoIP provision

of customer ANI/ALI data for ENS services should of course be subject to the same non-disclosure provisions as pertain to wireline ANI/ALI data provided for 9-1-1 and ENS purposes.

(iv) Requirements related to implementation of Electronic Demand Notice Systems.

Currently, when there is a 9-1-1 hang-up by a wireless service provider customer, or other situation in which the PSAP needs to identify the residential address or other location of the caller, the PSAP must prepare a demand notice and fax it to the wireless carrier to request this information. An illustrative situation in which a demand notice has been sent involved a case in which a suicidal person called 9-1-1, but hung up before he was located by First Responders. The preparation of a paper demand letter and transmission to the wireless provider by fax necessarily involves some delay; delay which should be easily avoidable through implementation of an Electronic Demand Notice System.

An Electronic Demand Notice System might involve a Demand Notice Form on a wireless service provider's website, which the PSAP personnel could access over the Internet, fill-in, save and submit to the service provider. State or Commission regulations might require wireless providers to make such systems available, provide that the PSAP representative's entering their name on the form would constitute their electronic signature, and provide wireless service providers with immunity from any liability arising from their good faith compliance with a Demand Notice.

(v) Requirements that providers deploy at MSCs or other switching or routing centers (i) 9-1-1 Intercept Service systems, and/or systems to record video calls or attachments and transmit only the audio portion of the video call to the PSAP with a link that can be used to retrieve the recorded video via the ESInet or Internet.



We have discussed above the potential benefits of deploying 9-1-1 Intercept Services or systems to record video calls or attachments and transmit only the audio portion of the video call to the PSAP, along with a link that can be used to retrieve the recorded video via the ESInet or Internet. These systems could be deployed at the NG9-1-1 Data Center. Installing them at the MSCs would provide the benefit of limiting the potential for call blocking on that portion of the 9-1-1 network between the MSC and the NG9-1-1 Data Center. Installation of 9-1-1 Intercept Systems at the MSCs and wireline end offices or other switching centers would also permit use of such systems to provide instructions for communicating with the PSAP during a network outage or cable cut, and/or record and store a message from the caller to 9-1-1, to be forwarded to the PSAP when facilities are available.

(vi) Requirement Of Statewide Service By NG9-1-1 Service Providers.

In some states, a single state agency contracts for 9-1-1 service statewide, and the regulation of the service is pursuant to contract. In Colorado, Basic Emergency Service or 9-1-1 Service is subject to traditional rate-of-return, tariff regulation. There are approximately 54 County or multi-County 9-1-1 Authorities in Colorado, each serving a separate jurisdiction pursuant to tariff. Colorado is a Home Rule state, 9-1-1 surcharges are collected at the county-level, and the service is provided to the 9-1-1 Authorities at the county level pursuant to tariff. Current regulations require BESP, or 9-1-1 Service Providers, to provide service to all areas of the state, and to average rates within their service area.<sup>19</sup> There currently is one BESP. Two firms

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<sup>19</sup> The express requirement that the BESP provide service statewide was deleted during a re-codification of the CPUC's Rules, in a rulemaking proceeding in which the Hearing Commissioner stated that no substantive changes to the Rules regarding 9-1-1 were being made. A section of the Rules which was not deleted continues to reference the statewide service requirement.

have recently applied for certification as BESPs to provide NG9-1-1 Service, but dismissed their applications.

Approximately 75 percent of Colorado's population resides in just 10 counties along Colorado's Front Range, comprising 10 percent of Colorado's land area. The remaining 25 percent of Colorado's population reside in Colorado's remaining 54 counties comprising 90 percent of the state's land area, when transmission facility costs are distance sensitive. Absent statutory or regulatory requirements to serve the entire state, NG9-1-1 providers will naturally seek to "cherry-pick" the 9-1-1 Authorities for the more populous, low cost/higher revenue counties along the Front Range. Even if NG9-1-1 service providers choose to serve the higher cost rural areas, the absence of a requirement for averaged rates offered pursuant to tariff would lead to the perverse result of providers serving the less-competitive rural areas charging monopoly rates in those areas, in order to subsidize their service in the more competitive Front Range area.

An alternative to regulations requiring the provision of service statewide and averaged rates (implicit subsidies), is to establish a more administratively complex and expensive, explicit subsidy. This would also require designation of a provider or providers of last resort to supply service in high cost or low revenue areas where other competitors are unwilling to provide service. Whether the states can impose such requirements and regulations on NG9-1-1 Data Center Operators providing service over IP networks, or must allow high cost areas to fall out of the 9-1-1 system, should be clarified.

#### **VIII. Public Education Regarding NG9-1-1 And Messaging Capabilities.**

The Commission focuses on methods of informing the public where text messaging to 9-1-1 is, and is not, available. BRETSA and the Task Force believe such information is

unnecessary. Public education should be to encourage the public to *call* 9-1-1 rather than to text message 9-1-1, because an audio call will continue to be the most effective and expeditious means of getting First Responders dispatched and to the scene of the incident. If the Commission adopts the criteria for provision of text messaging advocated by BRETSA and the Task Force, text messaging will likely be implemented at a time when many PSAPs are able to receive text messages addressed to 9-1-1. In addition, one of the primary advantages of NG9-1-1 is the flexible routing. If a PSAP is unable to receive text messages, the text messages can be routed to a PSAP which is able to receive them, and the incident data necessary for dispatch transmitted to the Dispatching PSAP.

Service providers should be key partners with the public safety community in educating the public regarding 9-1-1, including the transition to NG9-1-1. Service providers (and CPE providers) have unique opportunities to provide their customers with information regarding 9-1-1 in product packaging, smartphone help files, bill inserts, through customer service channels and on their websites.

Respectfully submitted,

**BOULDER REGIONAL EMERGENCY  
TELEPHONE SERVICE AUTHORITY**

**THE COLORADO 9-1-1 TASK FORCE**

By: \_\_\_\_\_/s/\_\_\_\_\_

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December 12, 2011